IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) An optical cavity structure, comprising:

an input port for receiving input optical signals from a first waveguide;

a three dimensional ~~interconnecting~~ high transmission cavity structure that receives said input optical signals and interconnects said first waveguide to a second waveguide, said three dimensional high transmission cavity~~interconnecting~~ structure includes at least four straight edges that are orthogonal and of a finite width and thickness; and

an output port coupled to said three dimensional high transmission cavity~~interconnecting~~ structure for providing said second waveguide with said input optical signals.

2. (Currently Amended) The optical cavity structure of claim 1, wherein the three dimensional high transmission cavity~~interconnecting~~ structure reflects said input optical signals at a 45 degree angle.

3. (Currently Amended) The optical cavity structure of claim 2, wherein the three dimensional high transmission cavity~~interconnecting~~ structure interconnects said first and second waveguides at 90 degrees.

4. (Currently Amended) The optical cavity structure of claim 3, wherein said three dimensional high transmission cavity~~interconnecting~~ structure is a five-sided polygon.

5. (Currently Amended) The optical cavity structure of claim 4, wherein the three dimensional high transmission cavity~~interconnecting~~ structure includes a fifth side that is aligned at an angles 135 degrees from both of its respective sides.

6. (Original) The optical cavity structure of claim 5, wherein said first waveguide and second waveguide are polySi waveguides.

7. (Original) The optical cavity structure of claim 5, wherein said first waveguide and second waveguide are SOI waveguides.

8. (Currently Aamended) The optical cavity structure of claim 7, wherein said three dimensional high transmission cavity~~interconnecting~~ structure is etched using anisotropic etching.

9. (Previously Presented) An optical splitter device, comprising

an input port for receiving input optical signals from an input waveguide; and

a three dimensional splitting structure that receives said input optical signals and split said input optical signals into at least two separate signals that are directed to at least two output waveguides, said three dimensional splitting structure includes at least two separate optical cavities connected to their sides, wherein each of said optical cavities includes at least four straight edge sides that are orthogonal with a finite width and thickness.

10. (Previously Presented) The method of claim 9, wherein said three dimensional splitting structure is a T-shaped structure.

11. (Original) The optical splitter device of claim 10, wherein said first waveguide and said at least two output waveguides are polySi waveguides.

12. (Original) The optical splitter device of claim 10, said first waveguide and said at least two output waveguides are SOI waveguides.

13. (Original) The optical splitter device of claim 10, wherein said optical cavities are etched using anisotropic etching.

14. (Previously Presented) The optical splitter device of claim 10, wherein the SOI waveguides have a silicon core.

15. (Original) The optical splitter device of claim 14, wherein the SOI waveguides have cladding of silica and top cladding of air.

16. (Original) The optical splitter device of claim 13, wherein the polySi waveguides have a silicon core.

17. (Original) The optical splitter device of claim 16, wherein the polySi waveguides have cladding of silica and top cladding of air.

18. (Previously Presented) The optical splitter device of claim 10, wherein the three dimensional splitting structure is Y-shaped.

19. (Original) The optical splitter device of claim 18, wherein said at least two optical cavities form a seven sided polygon.

20. (Original) The optical splitter device of claim 19, wherein said seven sided polygon includes five straight edge sides that are orthogonal.

21. (Original) The optical splitter device of claim 20, wherein the seven sided polygon includes two sides that are aligned at angles of 135 degrees and 270 degrees with their respective adjacent sides.

22. (Original) The optical splitter device of claim 21, wherein said first waveguide and said at least two output waveguides are polySi waveguides.

23. (Original) The optical splitter device of claim 21, said first waveguide and said at least two output waveguides are SOI waveguides.

24. (Original) The optical splitter device of claim 21, wherein said optical cavities are etched using anisotropic etching.

25. (Original) The optical splitter device of claim 23, wherein the SOI waveguides have a silicon core

26. (Original) The optical splitter device of claim 25, wherein the SOI waveguides have cladding of silica and top cladding of air.

27. (Original) The optical splitter device of claim 22, wherein the polySi waveguides have a silicon core

28. (Original) The optical splitter device of claim 27, wherein the polySi waveguides have cladding of silica and top cladding of air.

29. (Currently Amended) An optical resonator, comprising:

a plurality of straight waveguides; and

a plurality of three dimensional high transmission cavity~~interconnecting~~ elements for interconnecting said plurality of straight waveguides to form said optical resonator, wherein said three dimensional interconnecting elements include at least four straight edges that are orthogonal and of a finite width and thickness.

30. (Currently Amended) The optical cavity structure of claim 29, wherein said three dimensional high transmission cavity ~~interconnecting~~ elements are five-sided polygons.

31. (Original) The optical cavity structure of claim 30, wherein the five-sided polygons each include a fifth side that is aligned at an angles 135 degrees from both of its respective sides.

32. (Original) The optical cavity structure of claim 31, wherein said plurality of waveguides are polySi waveguides.

33. (Original) The optical cavity structure of claim 31, wherein said plurality of waveguides are SOI waveguides.

34. (Currently Amended) The optical cavity structure of claim 33, wherein said three dimensional high transmission cavity~~interconnecting~~ elements are etched using anisotropic etching.